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HAPAS Certificate
16/H251

Product Sheet 1 Issue 3

SWARCO HITEX PATCH REPAIR PRODUCT FOR HIGHWAYS

SWARCO ECO TEXPATCH

This HAPAS Certificate Product Sheet[1] is issued by the British Board of Agrément (BBA), supported by National Highways (acting on behalf of the Overseeing Organisations of the Department for Transport; Transport Scotland; the Welsh Government and the Department for Infrastructure, Northern Ireland), the Association of Directors of Environment, Economy, Planning and Transport (ADEPT), the Local Government Technical Advisers Group and industry bodies. HAPAS Certificates are normally each subject to a review every three years.

(1) Hereinafter referred to as 'Certificate'.

This Certificate relates to SWARCO ECO TEXPATCH, a hot-applied thermoplastic material, incorporating polymer-modified bitumen, fillers, aggregates and fibres, for use as a patch repair product for potholes and other similar defects occurring in bituminous surfaces on non-trafficked and trafficked highways.

CERTIFICATION INCLUDES:

- factors relating to compliance with HAPAS requirements
- factors relating to compliance with Regulations where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.

KEY FACTORS ASSESSED

Surface characteristics — the product has satisfactory surface texture and skid resistance properties (see section 6).

Mechanical resistance and bond strength — the product has a satisfactory resistance to trafficking and loadings (see section 7).

Durability — the product is suitable to ensure a safe level repair of a bituminous surface as part of routine (planned) and reactive (unplanned) maintenance works (see section 9).

The BBA has awarded this Certificate to the company named above for the product described herein. This product has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of Third issue: 5 May 2022

Originally certificated on 1 August 2016
Certificate amended on 31 October 2023 to update system name and company details.

Hardy Giesler
Chief Executive Officer

The BBA is a UKAS accredited certification body – Number 113.
The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk
Readers MUST check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.
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Requirements

In the opinion of the BBA, SWARCO ECO TEXPATCH, when used in accordance with the provisions of this Certificate, will provide a satisfactory repair to the road surface.

Additional requirements of the Overseeing Organisations can be found in:

- *Potholes and Repair Techniques for Local Highways, ADEPT, March 2019*
- *Design Manual for Roads and Bridges (DMRB), CM 231 – Pavement surface repairs, March 2020*.

(1) The MCHW is operated by the Overseeing Organisations: National Highways, Transport Scotland, the Welsh Government and the Department for Infrastructure (Northern Ireland).

Regulations

Construction (Design and Management) Regulations 2015
Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

See section: 3 *Delivery and site handling* (3.1 and 3.3) of this Certificate.

Technical Specification

1 Description

SWARCO ECO TEXPATCH is a hot-applied thermoplastic material, incorporating polymer-modified bitumen, fillers, aggregates and fibres, applied by hand using a screed box.

2 Manufacture

2.1 The product is manufactured in a batch-blending process.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

2.3 The management system of the manufacturer has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 by BSI (Certificate FM 631027).

3 Delivery and site handling

3.1 SWARCO ECO TEXPATCH is supplied in 25 kg low melt polythene bags labelled with the product name, batch number and date of manufacture.

3.2 Bags must be stored under cool and dry conditions, protected from contamination and sources of heat.

3.3 The Certificate holder has taken the responsibility of classifying and labelling the product under the *CLP Regulation (EC) No 1272/2008 on the classification, labelling and packaging of substances and mixtures*. Users must refer to the relevant Safety Data Sheet(s).

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on SWARCO ECO TEXPATCH.

Design Considerations

4 Use

4.1 SWARCO ECO TEXPATCH is satisfactory for use in minor routine repairs of potholes and other similar defects found in bituminous surfaces. Potholes are defined for the purpose of this Certificate as irregular shaped defects with a total area of less than 1 m^2 and a depth greater than 15 mm. They are not continuous or whole width defects.

4.2 The product must only be installed where the adjacent surface has properties which are considered at least equivalent to those of SWARCO ECO TEXPATCH (see section 6).

4.3 The product will satisfactorily fill a pothole or similar defect. It will not delay or stop the deterioration of the adjacent surface.

5 Practicability of installation

The product must only be installed by contractors trained and approved by the Certificate holder.

6 Surface characteristics

6.1 An assessment of the surface characteristics on existing installations, and laboratory testing of raw materials, indicate that the product has the following surface properties:

- mean initial texture depth of 1.1 mm
- mean initial skid resistance value (SRV) of 57
- mean polished stone value (PSV) of 62
- mean aggregate abrasion value (AAV) of 5.2.

6.2 The properties listed in section 6.1 should be compared to those of the existing adjacent surface to ensure the product is compatible, as detailed in section 4.2.

6.3 If the properties of the existing adjacent surface are unknown, Section S2 of the New Roads and Street Works Act 1991 : Specification for the Reinstatement of Openings in Highways (SROH) provides additional guidance on categorising Local Authority sites. For the motorway and trunk road network, additional guidance can be found within the relevant parts of MCHW, Volume 1 and the DMRB, CM 231 - Pavement surface repair.

7 Mechanical resistance and bond strength

7.1 Results of visual inspections on new and existing sites and information received from users of the product confirm that they have satisfactory resistance to trafficking and satisfactory bond characteristics on sites classified as Type 3 and 4 in accordance with the SROH.

Resistance to permanent deformation

7.2 SWARCO ECO TEXPATCH has a resistance to rut rate and rut depth that is classified as Class 2 in accordance with PD 6691 : 2015, Appendix D, Table D.2, suitable for heavily-stressed sites requiring very high rut resistance.

Tensile bond strength

7.3 Tests to TRL Report 176, Appendix J, tested at 20°C and –10°C confirmed satisfactory tensile bond strength to both dry and wet asphalt when installed in accordance with the provisions of this Certificate.

8 Maintenance

The product is not subject to any routine maintenance requirements, but any damage should be repaired in accordance with section 12.

9 Durability

9.1 For planned routine maintenance work where best practice installation is followed (see section 10) and the substrate and adjacent surface are generally sound, the product will provide an effective repair for at least 12 months.

9.2 For reactive (immediate/emergency/unplanned) repairs with minimum preparation and installation (see section 11) the expected durability will be reduced

Installation

10 General

10.1 To ensure that optimum performance and durability is achieved, installation of SWARCO ECO TEXPATCH must follow best practice. For the purposes of this Certificate this is considered to be in accordance with either:

- BS 434-2 : 2006, Clause 13.2, or
- Design Manual for Roads and Bridges (DMRB), CM 231 - Pavement surface repairs.

10.2 Traffic management must be in accordance with the latest issue of the Department for Transport *Traffic Signs Manual*, Chapter 8, or as agreed between the purchaser and installer.

10.3 The ambient and road surface temperatures are to be recorded at the start and, if the weather is variable, during the installation process. Installation must only be carried out if the road surface temperature is >0°C. The product must not be installed during periods of continuous or heavy rain.

10.4 The areas to which the product is to be applied must be clearly defined by the client prior to commencement of work on site.

11 Preparation of the road surface

11.1 The area to be repaired must be marked out and the edges removed back to sound material using a hot compressed air (HCA) lance.

11.2 Prior to application of SWARCO ECO TEXPATCH, all surfaces must be free from ice, loose material, oil, grease, and standing water or other contaminants that may affect the bond to the existing surface.

12 Application

12.1 The required amount of SWARCO ECO TEXPATCH is loaded into the pre-heater, and the temperature of the product is raised to between 160°C and 180°C and mixed until fully homogeneous.

12.2 The maximum safe heating temperature of SWARCO ECO TEXPATCH is 200°C. Material should not be heated above this temperature as prolonged overheating could lead to degradation of the binder component, which will adversely affect product performance.

12.3 The prepared defect area is then filled with SWARCO ECO TEXPATCH using a suitable screed box (typical sizes include 100, 150 and 200 mm). Larger repairs may require use of a wider screed box, both to aid regulating the final layer and to produce a satisfactory surface finish.

12.4 Deeper defect areas, up to 50 mm (depending on the nature of the defect), may require a two stage application: an initial pour to fill the main body of the defect, then a topping screed layer to further seal in the repair once the initial pour has sufficiently cooled.

12.5 The finished surface of all repairs will be regular in shape and screed finished to overlap the adjacent sound material.

12.6 When an adjacent application is required, a minimum 5 mm overlap should be made.

12.7 The finished repair must be allowed to cool before opening to traffic. This will take approximately 10 to 25 minutes depending on the ambient temperature and repair depth. Deeper repairs may need two applications and will therefore take longer to fully set before being opened to traffic.

12.8 A visual inspection must be carried out by the installer to check for any discernible faults. These should be repaired before the site is open to traffic, or as agreed with the purchaser.

Technical Investigations

13 Investigations

13.1 Test data for SWARCO ECO TEXPATCH was assessed, relating to:

- maximum density
- bulk density
- void content
- resistance to deformation
- tensile bond strength
- initial and retained texture depth
- initial and retained skid resistance by pendulum test
- PSV and AAV of aggregate
- particle size distribution of aggregate.

13.2 Test data for SWARCO ECO TEXPATCH binder was assessed, relating to:

- softening point
- density
- ash content
- flow resistance
- tensile strength and elongation
- effects of prolonged heating.

13.3 An installation trial was carried out to assess the practicability of installation in accordance with the manufacturer's instructions and best practice methods identified in section 10.

13.4 A performance in use survey, site trials and visual inspections were carried out to assess the product's performance in service.

13.5 The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

Bibliography

BS 6319-7 : 1985 *Testing of resin and polymer/cement compositions for use in construction — Method for measurement of tensile strength*

BS EN 933-1 : 2012 *Tests for the geometrical properties of aggregates — Determination of particle size distribution — Sieving method*

BS EN 1097-8 : 2009 Tests for mechanical and physical properties of aggregates — Determination of the polished stone value

BS EN 1238 : 2011 *Adhesives — Determination of the softening point of thermoplastic adhesives (ring and ball)*

BS EN 12697-5 : 2009 *Bituminous mixtures — Test methods for hot mix asphalt — Determination of the maximum density*
BS EN 12697-6 : 2012 *Bituminous mixtures — Test methods for hot mix asphalt — Determination of bulk density of bituminous specimens*
BS EN 12697-8 : 2003 *Bituminous mixtures — Test methods for hot mix asphalt — Determination of void characteristics bituminous specimens*
BS EN 12697-22 : 2003 *Bituminous mixtures — Test methods for hot mix asphalt — Wheel tracking*

BS EN 13036-1 : 2010 *Road and airfield surface characteristics — Test methods — Measurement of pavement surface macrotexture depth using a volumetric patch technique*

BS EN 13880-5 : 2004 *Hot applied joint sealants — Test method for the determination of flow resistance*

BS EN ISO 1183-1 : 2004 *Plastics — Methods for determining the density of non-cellular plastics — Immersion method, liquid pyknometer method and titration method*

BS EN ISO 3451-1 : 2008 *Plastics — Determination of ash — General methods*

BS EN ISO 9001 : 2015 *Quality management systems — Requirements*

PD 6691 : 2015+A1:2016 *Guidance on the use of BS EN 13108, Bituminous mixtures — Material specifications*

Design Manual for Roads and Bridges (DMRB), CM 231 – Pavement surface repairs, March 2020

New Roads and Street Works Act 1991 : Specification for the Reinstatement of Openings in Highways : Code of Practice Fourth Edition (England), (February 2019)

TRL Report 176 : 1997 *Laboratory tests on high-friction surfaces for highways*

14 Conditions

14.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page – no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document – it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

14.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

14.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

14.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

14.5 In issuing this Certificate the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

14.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.

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